

**In the Claims**

**The claims have been amended as follows:**

1      1. (Currently Amended) A method of removing ~~contaminants~~contaminant particles  
2      from an article surface comprising the steps of:  
3              providing at least two fluids of differing densities such that a fluid interface exists  
4              between each fluid;  
5              providing an article with one or more ~~contaminants~~contaminant particles on a surface  
6              of the article having a greater affinity or solubility to one of the at least two fluids;  
7              positioning the article into one of the at least two fluids; and  
8              removing one or more of the ~~contaminants~~contaminant particles on the article surface  
9              by passing the article through at least one fluid interface vertically, horizontally, or  
10              at any other orientation.

*D29*

1      2. (Currently Amended) The method of claim 1 wherein in the step of providing an  
2      article with a contaminant particle on the surface of the article having a greater affinity or  
3      solubility to one of the at least two fluids, the one of the at least two fluids having a  
4      greater affinity or solubility to the contaminant particle has a higher density than another  
5      of the at least two fluids.

1       3. (Currently Amended) The method of claim 2 wherein the step of providing at least  
2       two fluids of differing densities comprises providing water and chloroform such that the  
3       contaminant particle will remain in the water layer when the article is passed through the  
4       fluid interface into into the chloroform layer and further including the step of removing  
5       the water layer prior to removing the article.

1       4. (Currently Amended) The method of claim 1 wherein in the step of providing an  
2       article with a contaminant particle on a surface of the article having a greater affinity or  
3       solubility to one of the at least two fluids, the one of the at least two fluids having a  
4       greater affinity or solubility to the contaminant particle has a lower density than the other  
5       of the at least two fluids.

1       5. (Currently Amended) The method of claim 4 wherein the step of providing at least  
2       two fluids of differing densities comprises providing water and ether such that the  
3       contaminant particle will remain in the water layer when the article is passed through the  
4       fluid interface.

1       6. (original) The method of claim 1 wherein the step of providing at least two fluids  
2       of differing densities includes providing a pressurized gas.

1       7. (Currently Amended) The method of claim 1 wherein the step of removing the  
2       contaminant particle comprises etching the contaminant particle on the article surface by  
3       positioning the article in the fluid having a greater affinity or solubility for the  
4       contaminant particle, such fluid being denser than another of the at least two fluids.

1       8. (Currently Amended) The method of claim 1 further including the step of  
2       terminating the removing step by extracting the article through the fluid interface into  
3       another of the at least two fluids having substantially no affinity to the contaminant  
4       particle.

*D-9*  
1       9. (Currently Amended) The method of claim 1 further including the step of  
2       terminating the removing step by removing one of the at least two fluids having  
3       substantially no affinity to the contaminant particle.

1       10. (Currently Amended) The method of claim 1 wherein in the step of providing an  
2       article with a contaminant particle, the contaminant particle having a greater affinity or  
3       solubility to a fluid having a higher density than another of the at least two fluids, and  
4       wherein the step of positioning the article into the at least two fluids comprises  
5       positioning the article into the at least two fluids with agitation or energy input which is  
6       periodic in time, or any combination thereof and further including the step of ceasing the  
7       agitation and passing the article through the fluid interface.

1        11. (Currently Amended) The method of claim 1 wherein the fluids are mixed at an  
2        elevated temperature and further including the steps of ceasing the mixing at an elevated  
3        temperature and cooling the fluids such that the fluid having a higher density with an  
4        affinity for the contaminant particle settles and passing the article through the fluid  
5        interface.

1        12. (Currently Amended) A method of removing a contaminant particle from a  
2        workpiece surface comprising the steps of:

3        *D* 3. providing a reaction vessel having a first inlet/outlet means located at a bottom of the  
4        vessel and a second inlet/outlet means located above the first outlet means;  
5        providing a first fluid into the reaction vessel;  
6        providing at least one other fluid into the reaction vessel, the at least one other fluid  
7        having a higher density than the first fluid such that a fluid interface exists between  
8        the first fluid and the at least one other fluid;  
9        providing a workpiece having a surface contaminant particle having a greater affinity  
10      or solubility to either the first fluid or the at least one other fluid;  
11      submerging the workpiece into the reaction vessel having the first fluid and the at least  
12      one other fluid such that the workpiece is below the fluid interface;  
13      removing the surface contaminant particle by passing the workpiece through the fluid  
14      interface; and

15 terminating the removing step.

1 13. (original) The method of claim 12 further including the step of providing another  
2 fluid into the reaction vessel having a different density than either the first fluid or the at  
3 least one other fluid.

1 14. (Currently Amended) The method of claim 12 wherein the step of providing a  
2 workpiece having a surface contaminant particle comprises providing a workpiece having  
3 a surface contaminant particle having a greater affinity or solubility to the first fluid and  
4 the step of submerging the workpiece into the reaction vessel comprises positioning the  
5 workpiece in the at least one other fluid layer such that during the step of removing the  
6 surface contaminant particle, the surface contaminant particle remains in the first fluid  
7 layer.

1 15. (Currently Amended) The method of claim 12 wherein the step of providing a  
2 workpiece having a surface contaminant particle comprises providing a workpiece having  
3 a surface contaminant particle having a greater affinity or solubility to the at least one  
4 other fluid and the step of removing the surface contaminant particle comprises passing  
5 the workpiece through the fluid interface into the at least one other fluid layer such that  
6 the surface contaminant particle is removed with the at least one other fluid layer.

1       16. (Currently Amended) The method of claim 15 wherein the removing step  
2       comprises lifting the workpiece through the fluid interface into the first fluid which has  
3       substantially no affinity for the surface contaminant particle.

1       17. (Previously Amended) The method of claim 12 further including the step of  
2       heating the first fluid and at least one other fluid into solution after submerging the  
3       workpiece into the reaction vessel such that upon cooling, the first fluid and the at least  
4       one other fluid are immiscible with the fluid interface present and the workpiece is  
5       substantially present in only one of the fluids.

DJ

1       18. (Currently Amended) The method of claim 12 further including the step of  
2       agitating the first fluid and the at least one other fluid after submerging the workpiece into  
3       the reaction vessel such that upon ceasing agitation, the first fluid and the at least one  
4       other fluid are immiscible with the fluid interface present and the surface contaminant  
5       particle is present in only one of the fluids.

1       19. (Canceled)

1       20. (Currently Amended) The method of claim 12 wherein the step of removing the  
2       surface contaminant particle comprises etching the surface contaminant particle from a

3       surface of the workpiece and wherein the step of terminating the removing step by  
4       passing the workpiece through the fluid interface comprises a rapid etch stop.

1       21. (Previously Amended) The method of claim 13 wherein the step of terminating the  
2       removing step comprises removing the first fluid from the reaction vessel.

1       22. (original) The method of claim 12 wherein the steps of providing a first fluid or the  
2       at least one other fluid comprises providing a pressurized gas.

1       23. (Currently Amended) A method of removing ~~contaminants~~contaminant particles  
2       from a workpiece surface comprising the steps of:  
3           providing a reaction vessel containing water;  
4           providing at least one fluid having a different density than the water such that  
5           predominant fluid layers and a water layer exists with a fluid interface between  
6           each fluid layer and the water layer;  
7           providing a workpiece having surface contaminant particles;  
8           passing the workpiece through the at least one fluid interface; and  
9           removing the ~~contaminants~~particles from the workpiece surface as the  
10          ~~contaminants~~contaminant particles remain in the water layer.

1       24. (Currently Amended) The method of claim 23 further including the step of  
2       removing the water layer from the reaction vessel when the step of removing the  
3       contaminantscontaminant particles is completed if the workpiece is positioned below the  
4       water layer.

1       25. (Currently Amended) A method of removing a surface contaminant particle from a  
2       workpiece surface comprising the steps of:

3               providing an etchant fluid;  
4               providing at least one fluid immiscible with the etchant fluid having a different density  
5               than the etchant fluid and forming a fluid interface therebetween;  
6               positioning a workpiece in the etchant fluid to facilitate etching of a surface  
7               contaminant particle on the workpiece; and  
8               terminating etching of the surface contaminant particle when the workpiece is passed  
9               through the fluid interface into the at least one fluid immiscible with the etchant  
10              fluid.

*D 2*

1       26. (Previously Amended) The method of claim 25 wherein the step of providing at  
2       least one fluid immiscible with the etchant fluid comprises providing two fluids  
3       immiscible with the etchant fluid, both fluids having a lower density than the etchant fluid  
4       and immiscible with each other such that a first fluid interface exists between the two  
5       fluids and the etchant fluid and a second fluid interface exists between the two fluids.

1        27. (Currently amended) The method of claim 26 wherein the step of terminating  
2        etching of the surface ~~component~~contaminant particle comprises passing the workpiece  
3        through the first fluid interface into one of the two fluids.

1        28. (Currently Amended) The method of claim 26 wherein the step of terminating  
2        etching of the surface contaminant particle comprises drawing the workpiece through the  
3        first fluid interface to provide a rapid etch stop and further including the step of passing  
4        the workpiece through the second fluid interface such that a protective coating is formed  
5        on a surface of the workpiece.

1        29. (canceled)

1        30. (canceled)